



# HEALTH PHYSICS SOCIETY

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*“Specialists in Radiation Safety”*

November 22, 2006

Dr. Jane Summerson  
EIS Document Manager  
Regulatory Authority Office  
Office of Civilian Radioactive Waste Management  
U.S. Department of Energy  
1551 Hillshire Drive, M/S 010  
Las Vegas, NV 89134

**Brian Dodd, Ph.D.**

**President**

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Dear Dr. Summerson:

As President of the Health Physics Society (HPS), it is my pleasure to provide you, on behalf of the HPS, comments on the Department of Energy's Supplemental Yucca Mountain Environmental Impact Statement (EIS). These comments are provided in accordance with the Federal Register Notice Volume 71, No. 198, Friday, October 13, 2006.

The HPS is an independent non-profit scientific organization of professionals in the science and practice of radiation safety. In July 2006, the HPS issued its position statement "Managing Spent Nuclear Fuel," a copy of which is enclosed. The position statement may also be found on the HPS Web site at [http://hps.org/documents/managing\\_spent\\_fuel.pdf](http://hps.org/documents/managing_spent_fuel.pdf).

In this statement, the HPS has taken the position that management of spent fuel from nuclear reactors should be conducted in a manner that accommodates evolving technologies and that does not permanently dispose of potentially valuable material that is contained in a spent-fuel assembly. In support of this position, the HPS has made a specific recommendation that is directly related to the planned Supplemental Yucca Mountain EIS. The recommendation is that spent nuclear fuel should be designated for monitored interim retrievable storage for a period intended to be at least 100 years but with a possibility of being as long as 300 years.

The Supplemental EIS will evaluate the impact of the latest repository design and associated plans. These latest plans include a redesign of the surface handling and processing facilities to include, among other things, handling facilities to temporarily store spent nuclear fuel and high-level radioactive waste on aging (or staging) pads to meet waste package

thermal limits (aging), or to provide a surge capacity to maintain flexibility in waste handling operations (staging). In addition, the latest plans include a design to emplace (dispose of) the waste packages in emplacement drifts (i.e., tunnels), which would remain open and ventilated for a nominal period of 50 years after emplacement. Since the emplacement process is planned to take 50 years to complete, DOE states that under the "Proposed Action" emplaced waste packages could be retrieved at any time prior to 100 years after the start of emplacement.

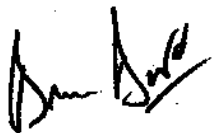
The HPS requests the DOE expand the Supplemental EIS to evaluate the impact if the HPS recommendation were to be adopted. That is, have the EIS cover the possibility of spent nuclear fuel being retrievable at any time prior to 300 years, whether that is through the use of the aging/staging pads or by being able to be retrieved from the emplacement drifts.

Expansion of the EIS to cover a period that allows the spent nuclear fuel to be retrieved up to 300 years will form a basis for decision-making on the positions and recommendations of the HPS. In addition, it will provide information on the environmental impact if the design timeline of being able to retrieve the waste up to 100 years after start of emplacement were not met.

The HPS does not believe that expanding the possible time to retrieve waste from 100 years to 300 years will result in a significant increase in the work to perform the Supplemental EIS.

The HPS appreciates the opportunity to provide these comments to DOE.

Sincerely,

A handwritten signature in black ink, appearing to read "Brian Dodd", with a stylized flourish at the end.

Brian Dodd, Ph.D.

Enclosure



HEALTH  
PHYSICS  
SOCIETY

## MANAGING SPENT NUCLEAR FUEL

### POSITION STATEMENT OF THE HEALTH PHYSICS SOCIETY\*

Adopted: July 2006

Contact: Richard J. Burk, Jr.  
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The Nuclear Waste Policy Act of 1982 legislates a system of managing spent nuclear fuel that results in its permanent disposal in appropriate geological repositories. Although a repository site has been identified, studied, and mostly developed as provided for by this law, the actual completion and use of the repository is still decades off with the potential for public and legal actions preventing it from ever being operational. In the meantime, nuclear reactor technology, energy use and demand, energy production effects on the environment, public-policy mechanisms, and medical knowledge have all evolved and can be seen to continue to evolve such that the assumptions and basis for the Nuclear Waste Policy Act may no longer be appropriate.

In light of the current situation and prospect of future developments relevant to managing spent nuclear fuel, the Health Physics Society (HPS) takes the following **positions**:

1. The HPS believes the management of spent fuel from nuclear reactors should be conducted in a manner that (a) uses only scientifically valid and reasonable assumptions for setting protection standards, (b) adequately protects the public and environment from radiation exposure resulting from natural, accidental, or malevolent release of radioactive materials from the spent fuel, (c) accommodates evolving technologies, and (d) does not permanently dispose of potentially valuable material that is contained in a spent-fuel assembly.
2. Regarding position 1.(a) above, the HPS believes the radiation protection standards recommended in its position statement "Ionizing Radiation-Safety Standards for the General Public" (HPS 2003) are appropriate for application to potential public exposure associated with management of spent nuclear fuel.

3. Regarding position 1.(b) above, the HPS believes the scientific validity and reasonableness of assumptions regarding the estimation of cancer and genetic risk from radiation exposure only allows the risk estimates to be extrapolated out for a period on the order of several generations (that is, on the order of a hundred years) but no more than a few hundred years. The basis for this is that today's limited knowledge of radiation risk mechanisms results in the necessity of knowing the lifestyles and underlying cancer and genetic experience of the population for which the risk is being estimated and it is unreasonable to think these can be known beyond a few generations. Of course, this limitation may be changed as our knowledge of the radiation risk mechanisms improves, which is an example of needing to have a spent nuclear fuel management system that accommodates evolving technologies (i.e., position 1.(c) above).

Regarding positions 1.(c) and 1.(d) above, the HPS makes the following **recommendations**:

1. Spent nuclear fuel should be designated for monitored interim retrievable storage for a period intended to be at least 100 years but with a possibility of being as long as 300 years.
2. An independent expert study should be performed to inform a risk-based decision on whether the location of the interim retrievable storage for up to 300 years should be on-site where the spent nuclear fuel is generated, should be centralized in the Yucca Mountain repository, or should be in some other configuration or location. This study should evaluate if any of these options present an unacceptable risk to the public and the environment from radiation exposure due to the presence of the spent nuclear fuel and due to the natural, accidental, or malevolent release of radioactive materials from the spent fuel.
3. Radiation protection standards should be developed for the interim storage facility or facilities based on a 300-year storage period. Radiation protection standards should not be developed for final permanent disposal/disposition of the spent nuclear fuel or wastes produced by processing the spent fuel until technologies and knowledge advance to the point of allowing a scientifically valid decision on final disposition.
4. The storage facility or facilities should be designed to have appropriate monitoring to ensure the integrity of the storage containers and facility or facilities remain intact throughout the storage period.

**Reference:**

Health Physics Society. Position statement "Ionizing Radiation-Safety Standards for the General Public," last revised June 2003.

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\* The Health Physics Society is a nonprofit scientific professional organization whose mission is excellence in the science and practice of radiation safety. Since its formation in 1956, the Society has grown to approximately 6,000 scientists, physicians, engineers, lawyers, and other professionals representing academia, industry, government, national laboratories, the Department of Defense, and other organizations. Society activities include encouraging research in radiation science, developing standards, and disseminating radiation safety information. Society members are involved in understanding, evaluating, and controlling the potential risks from radiation relative to the benefits. Official position statements are prepared and adopted in accordance with standard policies and procedures of the Society. The Society may be contacted at 1313 Dolley Madison Blvd., Suite 402, McLean, VA 22101; phone: 703-790-1745; fax: 703-790-2672; email: HPS@BurkInc.com.